

REMARKS

Claims 1-67 were previously pending in this application. By this amendment, Applicant is canceling non-elected claims 32-67 without prejudice or disclaimer. Claims 1, 6, 10-12, 14-17, and 27 have been amended. Claim 68 has been added. As a result, claims 1-32 and 68 are pending for examination with claims 1, 12, 18 and 27 being independent claims. No new matter has been added.

Claim Objections

The Examiner has objected to claim 27 due to an apparent grammatical error, by reciting "the at one fiber preparation tool". Applicant has amended claim 27 to recite "the at least one fiber preparation tool". In view of the foregoing, withdrawal of the objection to claim 27 is respectfully requested.

Claim Rejections Under 35 U.S.C. §102(b)

Claims 1-4, 10-12, 15 and 16 stand rejected under 35 U.S.C. §102(b) as being anticipated by Csipkes et al. (U.S. Patent No. 6,122,936). As discussed below, Applicant has amended independent claim 1 to clearly distinguish Csipkes. Claims 6, 10, 11, and 14-17 have been amended in view of the amendment to claim 1. Applicant, however, respectfully traverses the rejections of claim 12, now rewritten in independent form.

As amended, independent claim 1 is directed towards an automated fiber preparation apparatus for optical fiber comprising, *inter alia*, a transporter that is constructed and arranged to automatically and simultaneously index a plurality of trays to a plurality of process stations in a direction from an upstream end of the transporter toward a downstream end of the transporter in response to a control signal. Each of the plurality of trays is configured to hold an optical fiber. The fiber preparation apparatus further comprises a strip tool and a cleave tool, each positioned at one of the plurality of process stations.

Csipkes discloses an apparatus for interconnecting optical fibers. The apparatus employs a precision handling tool 300 which holds, transports, and aligns the optical fibers as they are processed through the apparatus. The apparatus includes a plurality of optical fiber processing modules 130 that are supported on an automated optical workstation 100. Each processing

module is configured to execute a different step of the optical fiber interconnect process. As shown in Fig. 1, a material transfer mechanism, such as a robot arm 140, is arranged above the workstation to pick up and move the optical fiber precision handling tools between the modules. Thus, the Csipkes apparatus moves *one* precision handling tool from *one* module to the next module sequentially to process the optical fiber. Even if the apparatus in Csipkes can simultaneously perform more than one of the steps of the optical fiber interconnect process, Csipkes does not disclose a transporter that simultaneously indexes a plurality of trays to a plurality of process stations in a direction from the upstream end toward the downstream end, wherein each of the trays is configured to hold an optical fiber, as recited in amended claim 1.

In the Office Action, the Examiner asserts that Csipkes discloses a transporter having an upstream end and a downstream end, configured to automatically index a tray to a plurality of process stations. In particular, the Examiner refers to the loading and unloading docks or conveyors 156, 158 and the robot arm 140. However, the only device disclosed by Csipkes as being capable of moving a fiber handling tool to each of the process stations is the robot arm 140. As discussed above, the robot arm can only move one handling tool at a time. Csipkes provides no teaching that the robot arm is capable of *simultaneously* indexing a plurality of trays to a plurality of process stations as recited in amended claim 1. Additionally, there is no teaching that the loading and unloading docks or conveyors 156, 158 index a plurality of trays to a plurality of processing stations as recited in amended claim 1. Therefore, regardless of what one designates as the "transporter", Csipkes does not disclose a transporter that simultaneously indexes a plurality of trays to a plurality of process stations as recited in amended claim 1. Thus, claim 1 patentably distinguishes over Csipkes, such that the rejection under §102 should be withdrawn.

Claims 2-4, 10, 11 and 15-16 depend from claim 1 and are patentable for at least the same reasons.

Claim 12, which has been rewritten in independent form, is directed towards an automated fiber preparation apparatus for optical fiber comprising, *inter alia*, a transporter that is constructed and arranged to automatically index a tray, which is configured to hold the optical fiber, to a plurality of process stations in a linear direction from an upstream end toward a downstream end of the transporter in response to a control signal. The fiber preparation

apparatus further comprises a strip tool positioned at one of the plurality of process stations, and a cleave tool positioned at one of the plurality of process stations.

As discussed above, Csipkes discloses an apparatus for interconnecting optical fibers and includes a fiber handling tool which is configured to hold the fibers while being processed through the apparatus. A material transfer mechanism, such as a robot arm, is arranged to pick up and move the fiber handling tool between the plurality of process modules. The robot arm clearly does not index a tray in a linear direction to the process modules.

In the Office Action, the Examiner asserts that the loading and unloading conveyors 156, 158 indexes a tray in a linear direction. However, as discussed above, the loading and unloading conveyor is not a transporter configured to index the fiber handling tool to a plurality of processing stations as recited in claim 1. Rather, the robot arm moves the handling tool to the plurality of process modules. Thus, claim 12 patentably distinguishes over Csipkes, such that the rejection under §102 should be withdrawn.

Claim Rejections Under 35 U.S.C. §103

Claims 5-9 and 14

Claims 5-9 and 14 stand rejected under 35 U.S.C. § 103 as being unpatentable over Csipkes in view of Uehara (U.S. Patent No. 4,916,811). Without acceding to the propriety of the combination, claims 5-9 and 14 depend from claim 1 and are patentable for at least the same reasons set forth above.

Claims 1-12 and 14-16

Claims 1-12 and 14-16 stand rejected over Uehara in view of Csipkes. Applicant respectfully traverses these rejections.

Independent claims 1 and 12 are discussed above.

Uehara discloses an apparatus for attaching a ferrule to each end of an optical fiber cable. The Uehara apparatus cuts and coils the fiber, and then the coiled fiber is placed on a conveyor rack, which is conveyed intermittently between process stations. At the various process stations, the sheath of the cable end is stripped, springs are attached to the cable, an adhesive is applied, and finally a ferrule is clamped onto the cable. The Examiner recognizes that Uehara does not

disclose a cleave tool for use in the fiber preparation. However, the Examiner relies on Csipkes as disclosing a cleave tool, and asserts that it would have been obvious to one of ordinary skill in the art at the time of the invention to include a cleave tool in the Uehara apparatus to ensure that the fiber was cleaved to the appropriate size prior to ferrule attachment. Applicant respectfully disagrees.

To establish a prima facie case of obviousness under §103, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. See MPEP §2143. The teaching or suggestion to make the claimed combination must be found in the prior art, not in the applicants' disclosure. See MPEP §2143.

In the Office Action, the Examiner has failed to set forth a prima facie showing of obviousness. In particular, the Examiner points to no teaching, suggestion or other motivation in the references or common knowledge in the art to modify Uehara to include a cleave tool in view of Csipkes. Rather, the Examiner merely asserted that:

“it would have been obvious to one of ordinary skill in the art at the time of the invention to include a cleave tool in order to ensure that the fiber was cleaved to the appropriate size prior to ferrule attachment.” (Office Action, p.8)

There is no teaching or suggestion in Uehara or Csipkes that the Uehara apparatus would benefit from the addition of the cleave tool to ensure that a fiber processed with the Uehara apparatus was cleaved to the appropriate size prior to ferrule attachment as suggested by the Examiner. In this regard, the Uehara apparatus is already configured to cut a cable into suitable lengths. The cable is subsequently stripped and a ferrule is attached to the stripped cable ends. Nothing in the record suggests that there is any deficiency with the Uehara apparatus in cutting and stripping the cable to the appropriate size for ferrule attachment.

Notwithstanding the lack of any teaching or suggestion, one of skill would not have been motivated to add a cleave tool to the Uehara apparatus based on Csipkes. Uehara and Csipkes are directed to different optical fiber processes. Uehara discloses an apparatus that attaches a termination device, such as a ferrule, to the ends of the optical fiber. In contrast, Csipkes discloses an apparatus that performs fusion splicing of optical fiber. Although not discussed in Csipkes, the ends of the optical fiber are cleaved to provide smoothly cut ends that are relatively

free of defects to effectively fuse the two ends together. If the ends are not cleaved, they may not properly fuse together, thereby rendering an inoperable or defective fused optical fiber. Thus, Csipkes provides no teaching or suggestion that would have motivated one of skill in the art to cleave the ends of an optical fiber prior to attaching a ferrule to the ends of an optical fiber as taught by Uehara.

In view of the foregoing, the Examiner has failed to set forth a *prima facie* case of obviousness. Rather, it appears that the Examiner has attempted to reconstruct Applicant's invention using impermissible hindsight. The references provide no teaching, suggestion or other motivation to combine Uehara and Csipkes as suggested in the Office Action, such that the rejections of claims 1 and 12 are improper and should be withdrawn.

Claims 2-11 and 15-16 respectively depend from claims 1 and 12 and are patentable for at least the same reasons.

Claims 13 and 17

Claims 13 and 17 stand rejected under §103 as being unpatentable over Uehara and Csipkes, or alternatively over Csipkes, and in further view of Bloom (U.S. Patent No. 6,003,341). Without acceding to the propriety of these combinations, claims 13 and 17 respectively depend from claim 12 and 1 and are patentable for at least the same reasons set forth above.

Claims 18-19 and 23-25

Claims 18-19 and 23-25 stand rejected as being unpatentable over Csipkes in view of Bloom (U.S. Patent No. 6,003,341). Applicant respectfully traverses these rejections.

Claim 18 is directed towards an automated fiber preparation apparatus for an optical fiber comprising, *inter alia*, a tray, a transporter constructed and arranged to automatically index the tray, and a fiber preparation module including at least one pair of automated fiber preparation tools positioned on opposite sides of the transporter. The tray includes a fiber receptacle constructed and arranged to contain the optical fiber with opposing end portions of the optical fiber extending towards opposite ends of the tray. The pair of fiber preparation tools are constructed and arranged to automatically process the opposing end portions of the optical fiber.

As discussed above, Csipkes discloses an apparatus for splicing optical fibers, and includes a fiber handling tool which holds the fibers while being processed through the apparatus. In the Office Action, the Examiner recognizes that Csipkes does not disclose a tray including a fiber receptacle disposed between opposing ends thereof, where the fiber receptacle is constructed and arranged to contain the optical fiber therein with opposing end portions of the optical fiber extending toward the opposing ends of the tray. The Examiner looks to Bloom which allegedly discloses end portions of the optical fiber extending towards opposing ends of the tray. The Examiner concludes that it would have obvious to one of ordinary skill in the art at the time of the invention to have utilized such a tray to allow for easier and quicker manipulation of the fiber ends. Applicant respectfully disagrees.

As indicated above, Csipkes discloses an apparatus that performs fusion splicing of optical fiber. In this regard, one of ordinary skill in the art would readily appreciate that a fusion splicing process requires that the end portions of the optical fiber be aligned with and positioned to face each other, as disclosed by Csipkes, so that the fiber ends can be fused together. Thus, one of ordinary skill in the art would not have been motivated to employ a tray for an optical fiber that maintains end portions of the optical fiber extending towards opposing ends of the tray with the Csipkes fusion splicing apparatus because the end portions of the optical fiber could then not be spliced with the Csipkes apparatus. Accordingly, the rejection of claim 18 under §103 is improper and should be withdrawn.

Notwithstanding the foregoing and for the sake of argument only, even were one of ordinary skill in the art to somehow have been motivated to employ the Bloom tray with Csipkes, the claims patentably distinguish over the combination. Csipkes and Bloom, taken alone or together, do not disclose a fiber preparation module including at least one pair of automated fiber preparation tools positioned on opposite sides of the transporter to process opposing end portions of an optical fiber as recited in claim 18. As discussed above, the robot arm employed in Csipkes transports a handling tool between process stations. Assuming that the robot arm in Csipkes is the transporter, Csipkes does not disclose a pair of automated fiber preparation tools being positioned on opposite sides of the transporter to automatically process the opposing ends of an optical fiber as recited in claim 18. Further, even if one were to assume that the loading and unloading conveyors of Csipkes is the transporter, there is no fiber

preparation module with at least one pair of fiber preparation tools positioned on opposite sides of the transporter as recited in claim 18. Thus, claim 18 patentably distinguishes over the combination of Csipkes and Bloom, such that the rejection under §103 is improper and should be withdrawn.

Claims 19 and 23-25 depend from claim 18 and are patentable for at least the same reasons.

Claims 19-22 and 26

Claim 19-22 and 26 stand rejected under §103 as being unpatentable over Csipkes and Bloom, and further in view of Uehara. Without acceding to the propriety of the Examiner's positions, claims 19-22 and 26 depend from claim 18 and are patentable for at least the same reasons set forth above.

Claims 18-22 and 25-26

Claims 18-22 and 25-26 stand rejected as being unpatentable over Uehara in view of Bloom. Applicant respectfully traverses these rejections.

As discussed above, Uehara discloses an apparatus for attaching a ferrule to each end of an optical fiber cable. As shown in Figs. 14-19, the coiled optical fiber is moved intermittently on a conveyor through the process stations with the ends of the optical fiber facing in an upward direction as it passes through the process stations. In the Office Action, the Examiner recognizes that Uehara does not disclose a tray including a fiber receptacle disposed between opposing ends thereof, where the fiber receptacle is constructed and arranged to contain the optical fiber therein with opposing end portions of the optical fiber extending toward the opposing ends of the tray. The Examiner again looks to Bloom which allegedly discloses end portions of the optical fiber extending towards opposing ends of the tray. The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized such a tray to allow for easier and quicker manipulation of the fiber ends. Applicant respectfully disagrees.

As shown in Fig. 4 of Uehara, the conveyor racks 21 move the optical fiber on a conveyor 22 to the process stations. The ends of the optical fiber extend in a vertical direction from the same side of the conveyor rack, and the process stations operate directly above the

conveyor rack to process each end portion of the optical fiber. Consequently, one of ordinary skill in the art would not have been motivated to employ a conveyor rack or tray for an optical fiber that maintains end portions of the optical fiber extending towards opposing ends of the tray with the Uehara apparatus because each end portion of the optical fiber could then not be processed with the Uehara apparatus. Accordingly, the rejection of claim 18 under §103 is improper and should be withdrawn.

Notwithstanding the forgoing and for the sake of argument only, even were one of ordinary skill in the art to have been motivated to employ the Bloom tray with Uehara, the claims patentably distinguish over the combination. Uehara and Bloom, taken alone or together, do not disclose at least one pair of automated fiber preparation tools positioned on opposite sides of the transporter to process opposing end portions of an optical fiber as recited in claim 18. As discussed above, the conveyor racks 21 move the optical fiber on a conveyor 22 to the process stations of the Uehara apparatus. The ends of the optical fiber extend in a vertical direction from the conveyor rack, and the process stations operate directly above the conveyor rack. The Uehara apparatus does not include a pair of automated fiber preparation tools positioned on *opposite sides* of the transporter to automatically process the opposing ends of an optical fiber as recited in claim 18. Thus, claim 18 patentably distinguishes over the combination of Uehara and Bloom, such that the rejection under §103 is improper and should be withdrawn.

Claims 19-22 and 25-26 depend from claim 18 and are patentable for at least the same reasons.

Claims 19 and 23-24

Claims 19 and 23-24 stand rejected under §103 as being unpatentable over Uehara and Bloom, and further in view of Csipkes. Without acceding to the Examiner's positions, claims 19 and 23-24 depend from claim 18 and are patentable for at least the same reasons set forth above.

Claims 27-31

Claims 27-31 stand rejected as being unpatentable over Uehara and Csipkes, and further in view of Verwey et al. (U.S. Patent No. 4,214,848) and Brannen et al. (U.S. Patent No. 5,607,282). Applicant respectfully traverses these rejections.

Claim 27 is directed towards an automated fiber preparation apparatus for an optical fiber comprising, *inter alia*, a transporter constructed and arranged to automatically index a tray, and a fiber preparation module including at least one automated fiber preparation tool constructed and arranged to automatically process an end portion of the optical fiber. The apparatus also includes a load module, positioned at the upstream end of the transporter, that is constructed and arranged to hold a stack of trays and to automatically load the tray from the stack of trays onto the transporter. The apparatus further includes an unload module, positioned at the downstream end of the transporter, that is constructed and arranged to hold a stack of trays and to automatically unload the tray from the transporter into the stack of trays.

In the Office Action, the Examiner contends that Uehara discloses a transporter and a fiber preparation module as recited in claim 27. The Examiner recognizes that Uehara fails to disclose load and unload modules. However, the Examiner asserts that Csipkes discloses loading and unloading modules, and that one of ordinary skill in the art would appreciate that the loading and unloading modules allow for secure transport of the trays and for ease in transport of the trays to subsequent operations. The Examiner then concludes that it would have been obvious to one of ordinary skill in the art at the time of the present invention to have utilized load and unload modules (presumably in the Uehara apparatus) to manipulate the trays as needed for prior and subsequent operations. The Examiner then indicates that Csipkes is silent as to unloading the trays from a stack, and loading the trays in a stack. However, the Examiner looks to Verwey and Brennan as disclosing various tray or pallet stacking and unstacking systems, and asserts that stacking is a known method of reducing work floor space required for manufacturing, and that one of skill in the art would immediately appreciate that eliminating manual labor from stacking operations decreases manufacturing costs and improves work safety. The Examiner then concludes that it would have been obvious to one of ordinary skill in the art at the time of the present invention to have utilized stacks in both the loading and unloading stages to reduce workfloor space, increase safety, and reduce costs. Applicant respectfully disagrees.

Csipkes does not disclose loading and unloading modules as recited in claim 27. In particular, Csipkes does not teach or suggest a loading or unloading module that either automatically loads a tray onto a transporter or automatically unloads the tray from the transporter. Csipkes merely discloses what appears to be a conveyor that is positioned near the workstation. In Csipkes, the loading dock 156 is used for fiber cassette preparation and sequencing before the optical interconnect processes are performed, while the unloading dock 158 is used to transfer the optical fiber cassette for optical testing after the optical interconnect processes are performed. There is simply no teaching or suggestion in Csipkes that the loading and unloading docks or conveyors automatically load or unload the handling tool onto or from a transporter.

Concerning Verwey and Brannen, the Examiner looks to these references simply to demonstrate that stacking is a known method of reducing work floor space required for manufacturing, such that it would have been obvious to have employed stacks in both the loading and unloading stages of the Uehara and Csipkes combination. As an initial matter, the Examiner's reliance on Verwey and Brannen is improper as both references are non-analogous art. Verwey and Brannen are neither within the applicant's field of endeavor, nor reasonably pertinent to the particular problem of concern to the inventors. Notwithstanding the impropriety of the Examiner's reliance on Verwey and Brannen, these references fail to cure the deficiencies of Uehara and Csipkes.

Verwey and Brannen relate to systems for stacking and unstacking pallets. Neither reference discloses a load or unload module that automatically loads or unloads an optical fiber tray to or from a transporter which indexes the tray. Rather, Brannen discloses a depalletizing apparatus for unloading items, such as cases of plastic beverage containers and the like, stacked on a pallet (Brannen, abstract and col. 1), while Verwey discloses a palletizer for loading bundles of folded cardboard boxes into stacks onto a pallet (Verwey, abstract and col. 1, line 5 to col. 2, line 15). There is simply no teaching or suggestion that either of these systems is even capable of stacking or unstacking either the Uehara conveyor racks 21 or the Csipkes precision handling tools 300. In fact, there is no teaching or suggestion that either the Uehara conveyor racks 21 or the Csipkes precision handling tools 300 can even be stacked on each other.

In view of the foregoing, even were the references properly combinable, which they are not, claim 27 patentably distinguishes over the references. In particular, the references do not teach or suggest an automated fiber preparation apparatus including load and unload modules that automatically load and unload an optical fiber tray to and from a transporter which automatically indexes the tray as recited in the claim. Accordingly, the rejection of claim 27 under § 103 is improper and should be withdrawn.

Claims 28-31 depend from claim 27 and are patentable for at least the same reasons.

Claims 27-28

Claims 27-28 stand rejected as being unpatentable over Csipkes in view of Verwey et al. and Brannen et al.. Applicant respectfully traverses these rejections.

In the Office Action, the Examiner contends that Csipkes discloses a transporter and a fiber preparation module as recited in claim 27. The Examiner further contends that Csipkes discloses loading and unloading modules, and asserts that one of ordinary skill in the art would appreciate that the loading and unloading modules allow for secure transport of the trays and for ease in transport of the trays to subsequent operations. The Examiner then concludes that it would have been obvious to one of ordinary skill in the art at the time of the present invention to have utilized load and unload modules to manipulate the trays as needed for prior and subsequent operations. The Examiner then indicates that Csipkes is silent as to unloading the trays from a stack, and loading the trays in a stack. However, the Examiner looks to Verwey and Brennan as disclosing various tray or pallet stacking and unstacking systems, and asserts that stacking is a known method of reducing work floor space required for manufacturing, and that one of skill in the art would immediately appreciate that eliminating manual labor from stacking operations decreases manufacturing costs and improves work safety. The Examiner then concludes that it would have been obvious to one of ordinary skill in the art at the time of the present invention to have utilized stacks in both the loading and unloading stages to reduce work floor space, increase safety, and reduce costs. Applicant respectfully disagrees.

As discussed above, Csipkes does not disclose loading and unloading modules as recited in claim 27. In particular, Csipkes does not teach or suggest a loading or unloading module that either automatically loads a tray onto a transporter or automatically unloads the tray from the

transporter. Verwey and Brannen fail to cure this deficiency as neither reference discloses a load or unload module that automatically loads or unloads an optical fiber tray to or from a transporter which indexes the tray. Thus, claim 27 patentably distinguishes over Csipkes, Verwey and Brannen, such that the rejection under §103 is improper and should be withdrawn.

Claims 28-31

Claims 28-31 stand rejected as being unpatentable over Csipkes, in view of Verwey et al. and Brannen et al. as applied to claims 27-28, and further in view of Uehara. Without acceding to the Examiner's positions, claims 28-31 depend from claim 27 and are patentable for at least the same reasons set forth above.

Additional Claims

Claim 68 has been added to further define Applicant's invention. Claim 68 depends from claim 27 and is patentable for at least the same reasons set forth above.

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CONCLUSION

In view of the foregoing amendments and remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the undersigned attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

Respectfully submitted,


James M. Hanifin, Jr., Reg. 39,213
WOLF, GREENFIELD & SACKS, P.C.
600 Atlantic Avenue
Boston, Massachusetts 02210-2211
Telephone: (617) 720-3500

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